



UNITED STATES NAVY

MEDICAL NEWS LETTER

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Rear Admiral Edward C. Kenney MC USN
Surgeon General
Rear Admiral A. S. Chrisman MC USN
Deputy Surgeon General

Captain M. W. Arnold MC USN (Ret), Editor

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Change of Address

Please forward changes of address for the News Letter to: Commanding Officer, U. S. Naval Medical School, National Naval Medical Center, Bethesda 14, Md., giving full name, rank, corps, and old and new addresses.

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The issuance of this publication approved by the Secretary of the Navy on 28 June 1961.

SPECIAL ARTICLE

Dental Care for Dependents

With the passage of the Dependents' Medical Care Act and its implementation in the Navy by SECNAVINST 6320.8, the dependents of naval personnel residing either outside the United States or in areas within the United States that have been designated "remote" have benefited from routine dental care provided by the Naval Dental Corps. In addition, many dependents residing within the United States have been provided dental care to relieve pain and suffering or as an adjunct to medical and surgical treatment when such care was deemed necessary by the cognizant dentist and physician.

For an area within the United States to be designated remote, the law established certain criteria that must be met. Normally, an area will not be considered as remote unless it is more than thirty miles from a community with adequate civilian facilities. Consideration is given to unusual geographic and transportation factors which might unreasonably increase the time and expense of travel. What constitutes "adequate dental care" is determined by such factors as the number of civilian dentists in practice in adjacent communities, the availability of specialized dental services, whether the cost of civilian care is excessive, and if there are unusual delays in obtaining civilian dental care.

Statistics have been compiled recently to reflect the amount of dental care the Naval Dental Corps has provided for dependents. This treatment has been furnished without an increase in the officer or enlisted personnel ceilings which are based on the total authorized strength of the active list of officers and enlisted members of the Navy and Marine Corps. It is a tribute to the officers and men of the Dental Division of the Medical Department that this increased responsibility is being accomplished without materially affecting the oral health of active duty Navy and Marine Corps personnel. This has been brought about through increased efficiency of dental facility administration, new instrumentation, preventive dental programs, and research.

In each of the past two years, the number of dependent patients treated was approximately 110,000. Slightly less than a half-million procedures were performed each year for these patients. In one year alone, over 175,000 restorations were placed in their teeth. Other approximate figures on a yearly basis are: 4000 prosthetic appliances, 27,000 oral surgical procedures, 25,000 periodontal treatments, and a total of 205,000 procedures such as x-rays, examinations, and postoperative care.

The oral health of dependents figures prominently in the Dental Corps planning for the future. In areas where dependents are eligible to receive dental care, changes are being made to increase the number of Dental officers. Changes will be made in the Medical Materiel Section of the Supply Catalogue to provide materials for this treatment. The Dental Corps preventive dentistry program was altered to include those technics and educational programs that are directed at children and increased attention was focused on those

programs involving fluorine both from the standpoint of fluoridation of water supplies and the topical application of its compounds. Even the research program of the Naval Dental Corps has been altered to take into consideration some of the dental problems of dependents incident to living in a military atmosphere.

The Naval Dental Corps will continue to provide treatment to eligible personnel to the utmost of its capabilities and it is anticipated that developing programs in prevention and research will aid all naval dependents.

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Current Principles Governing Abdominal Surgery of the Aged

F. A. dePeyster and R. K. Gilchrist, Presbyterian -St. Luke's Hospital and Ravenswood Hospital, Chicago, Ill., Arch Surg 83: 138-146, July 1961.

From March 1945 to June 1960, 542 private patients 70 years or older were operated upon by the authors for general surgical disease, excluding those of the gynecologic, nervous, and genitourinary systems, bones, and skin. Of this number, 45 died, yielding an 8.3% mortality. Such data is meaningless because neither the nature nor extent of the pathology is stated. For example, gastrectomy for cancer carries an entirely different risk than gastrectomy for peptic ulcer. Likewise, the mortality rate of colectomy for inflammatory disease is not comparable to that for malignancy. To be of value, a statistical survey should provide enough information to assist in determining what one might anticipate with the next patient upon whom he might operate.

To this end, the authors studied the records of 390 consecutive private patients 70 years or older who had been operated upon by them only for primary disease of the intraperitoneal digestive system during this time at the Presbyterian-St. Luke's and Ravenswood Hospitals. There were 45 deaths occurring in the hospital, yielding a mortality of 11.5%. However, among these 390 aged patients, 15 had incurable or catastrophic disease, presenting virtually hopeless problems with little chance of recovery, where surgery was performed only to relieve pain or establish an unequivocal diagnosis. Little was done to prolong life. All of these patients, representing one-third of the mortality, are included in this report.

Summary

Emergency surgery, whether for cancer or benign disease, continues to carry 4 to 5 times greater risk than elective operations done under optimal conditions.

Based on the authors' experience, elective cholecystectomy, cholecystectomy with common duct exploration, gastrectomy for benign disease,

and combined abdominal perineal resections carried little more risk than similar procedures for all age groups. Therefore, they proceed with little hesitation to advise surgery in the aged where there is an indication for these elective procedures.

The operative risk of elective or emergency gastric surgery for malignancy was 5 times greater than operations for benign gastric lesions. On the other hand, the reverse was observed in colorectal operations where the mortality is one and one-half times greater for surgery of benign disease compared to those for malignancy.

From this study, the authors have concluded that the patient's age is not the important factor governing operative risk, but rather the nature and extent of the disease process requiring surgery.

* * * * *

Staphylococcal Pneumonia

V. L. Willman, J. E. Lewis Jr, and C. R. Hanlon, Dept of Surgery, St. Louis University, St. Louis, Mo. Arch Surg 83: 93-97, July 1961.

The serious morbidity and mortality of staphylococcal pneumonia in infants and children is associated with a high incidence of complications requiring surgical management. These complications include tension pneumatocele, residual pneumatocele, pneumothorax, and acute and chronic empyema. Although the management of such complications has been repeatedly discussed in the past, further emphasis is justified by the current, relatively greater incidence of staphylococcal pneumonia and the desirability of prompt definitive management of these patients by a broad segment of the profession.

A review of 12 complicated cases of staphylococcal pneumonia in pediatric patients emphasizes the importance of prompt surgical drainage as a supplement to aggressive, specific, antibacterial therapy. An empyema adequately drained by tube thoracostomy rather than repeated aspiration will obviate the need for late thoracotomy and decortication.

Readiness to perform trocar thoracostomy should be more general among those caring for patients with staphylococcal pneumonia, since lethal tension pneumothorax or tension pneumatocele may occur suddenly in patients whose clinical progress seems satisfactory.

In those rare instances of persistent pneumatocele requiring operation, a tube drainage is safer and preferable to resection.

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It is easy to do those things which one likes, and interesting to do those things which are to one's advantage, but to do those things which should be done is the test of a man's true stature. —Gonzales-Ulloa

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Clinical Management of Intestinal Obstruction

W. J. Burdette and L. E. Stevens, Dept of Surgery, University of Utah College of Medicine and Veterans Administration Hospital, Salt Lake City. Arch Surg 83: 120-129, July 1961.

Much of the controversy which persists in the treatment of patients with bowel obstruction concerns the decisions of whether and when to advise celiotomy. In view of these and other differences of opinion and continued advances in therapy, the experience obtained in treating obstruction on the Surgical Service of the University of Utah at the Salt Lake Veterans Administration Hospital has been utilized in formulating a rational method of management.

Plan of Management

Seventy-six patients with 88 episodes of obstruction were admitted during the decade 1948 - 1958. Males predominated 73 to 3, and the ages ranged from 21 to 84 years. This group was limited to those with a history of vomiting, distention, cramping abdominal pain, the roentgenographic demonstration of distended bowel, and/or proof of mechanical obstruction at surgery or autopsy. Patients with obstruction of pylorus or anal canal were excluded from the study. The plan of management adopted included: (1) constant observation, advising operation only when the obstructive process failed to resolve or impending strangulation was suspected, (2) routine use of the long tube to relieve bowel distention, and (3) repair of alterations in fluids, electrolytes, and blood volume incident to obstruction and decompression.

Close observation to detect the presence of strangulation was considered a most critical aspect of management. The onset of continuous rather than intermittent pain, signs of peritonitis, increasing muscular resistance, changing peristalsis, the presence of a palpable mass, rise in temperature, faster pulse, increasing leukocytosis, and failure of decompression after intubation were criteria for selecting patients requiring operative intervention. Routine studies on each patient included a careful history and physical examination, hematocrit, complete blood count, and urinalysis. Repeated determinations of serum electrolytes were more common in the group seen toward the end of the decade. Admission roentgenograms included those of chest and abdomen in erect, supine and, occasionally, lateral decubitus positions.

Results of Treatment

Attempts to pass a long intestinal tube beyond the pylorus were started shortly after admission. Four moribund patients who died before treatment began and 9 patients intubated with a short tube were exceptions. Careful attention to details of the better points of technic and persistence are both requisite to successful passage of the long tube; failure is usually due to discouragement.

The nasopharynx was first anesthetized topically with an analgesic spray. After estimation of the length of tubing required to extend from nares to pylorus, the tube and bag partially filled with mercury were manipulated through the nose and into the pharynx by means of curved forceps, and sips of water facilitated rapid passage into the stomach with swallowing. The patient was then asked to turn on his right side and the foot of the bed was elevated. During the ensuing half-hour, the tube was advanced a few centimeters at a time at frequent intervals. At that point, the patient was turned to the supine position (bed flat) for one hour, and the tube advanced approximately 5 cm every 10 minutes. Suction was then applied and the patient's movements were no longer restricted. Occasionally, fluoroscopy, roentgenograms, and the use of the flexible stylet-Smith tube were necessary to accomplish passage of the tube into the small bowel.

Sixty-three patients were intubated in a total of 75 attempts at small-intestinal decompression by means of the long tube. The average duration of intubation was 7 days, and the longest period was 48 days (in a patient with known metastatic carcinoma). No instances of the serious complications from intubation which are occasionally reported were encountered.

The presenting signs and symptoms of obstruction appeared in the following descending order of frequency: pain, distention of the abdomen, peristaltic abnormalities, vomiting, abdominal tenderness, fever, tachycardia, and palpable abdominal mass. The interval between initial symptoms and admission varied from a period of less than 24 hours in 40% of the patients to greater than 72 hours in 42% of the group. A diagnosis of obstruction was made roentgenographically in 77 of the 88 patients examined. The most common causes of obstruction in this group of patients were adhesions, carcinoma of the colon, and external hernias, with regional ileitis, other malignancies, internal hernias, volvulus, appendiceal abscess, and diverticulitis causing the obstruction less frequently. In 16 of the 88 cases, the bowel was strangulated. The interval between admission and operation was less in the strangulated cases, but 6 patients with strangulation of the bowel were operated on more than 72 hours after admission with a successful outcome in each case.

Eleven of the 88 patients admitted with obstruction died, representing a mortality rate of 12.5% (8.3% if the moribund patients are excluded). In those patients dying, the cause of the obstruction was external hernias in 4, malignancies in 6, and appendiceal abscess in one.

Summary

Sixty-four of 75 patients admitted with 88 episodes of bowel obstruction over a period of 10 years survived.

Deliberate diagnostic studies, long-tube decompression, antibiotic protection, and the determination and correction of fluid, electrolyte, and blood derangements constitute a plan of treatment which can be justified on the basis of the results obtained.

The deliberate approach to therapy, which abolishes mandatory early operation, often extends the interval between admission and celiotomy. It yields gratifying diagnostic accuracy preoperatively, as well as ample time for proper management without increasing morbidity and mortality even in those patients with impairment of the vascular supply of the bowel.

The most hopeful means of reducing current mortality figures appreciably is to decrease the interval between onset of symptoms and the institution of adequate management. Prophylactic hernioplasty, increased awareness of the likelihood of obstruction in patients with cancer, and early definitive management would have solved the problem of mortality due to intestinal obstruction in the series of cases reported.

Impairment of Hemostasis in the Urinary Tract -

The Role of Urokinase

G. P. McNicol, A. P. Fletcher MD, Norma Alkajaersig MS and Sol Sherry MD, Dept of Internal Medicine, Washington University School of Medicine, St. Louis, Mo. *J Lab Clin Med*, 58:34-46, July 1961.

Urokinase, an activator of the plasminogen-plasmin system, is normally present in urine and confers upon it the ability to lyse fibrin clots. Though the source of urokinase is still an unsettled question, it has been suggested that it may possibly play a role in maintaining patency of the urinary tract by lysing fibrinous deposits. Since such an action might also serve to impair hemostasis in the urinary tract, an investigation was undertaken of the effect of inhibiting urinary urokinase activity on the duration and extent of the bleeding observed following prostatectomy.

Such a study was made possible by the availability of ϵ -aminocaproic acid (EACA), a potent inhibitor of urokinase activity, which, when administered intravenously in appropriate dosage, was promptly excreted into the urine in concentrations sufficient to inhibit urokinase activity. It was found that in association with the inhibition of urokinase activity by this acid, there was a significant (fourfold) reduction in blood loss in ϵ -aminocaproic acid treated patients as compared to the reduction obtained with control subjects. Levels of this acid in the urine were measured, and the excretion rates and relationship between its concentration and urokinase inhibition are discussed.

The experimental results provide evidence to support the concept that urokinase can impair hemostasis in the urinary tract and that its inhibition may be attended with improved hemostasis.

Toxicity of Drugs in the Neonatal Period

W. L. Nyhan, Dept of Pediatrics, The Johns Hopkins University School of Medicine and The Harriet Lane Home, The Johns Hopkins Hospital, Baltimore, Md. J Pediat 59: 1-20, July 1961.

Ample evidence has been provided that the response of the very young patient to a pharmacologic agent may be quite different from that of the older child or the adult. Some differences between the child and the adult are simply a function of size. Correction of doses by appropriate factors for size, of which body weight is most useful, is indicated.

However, it is now clear that it is never justifiable to exploit this method of estimating drug dosage for infants in the neonatal period, and that qualitatively different responses are particularly common in the premature infant. The observations discussed indicate the need for a pediatric or neonatal pharmacology, since the responses of the young to pharmacologic agents cannot be predicted until they have been carefully studied. It is possible that similar statements may some day be made about geriatric pharmacology. Currently, new agents are studied in adult animals, and initial human pharmacology—or screening for differences between animal and man—is carried out in the adult.

Optimal pediatric therapeutics would result from the careful study of the pharmacology of compounds in newborn and young animals and in infants and children before release for general use. Screening of drugs in very young experimental animals alone would prevent a large part, if not all, of the new examples of iatrogenic toxicity of the sort discussed in this review. Without such controls there will undoubtedly be further examples of toxicity.

Most examples of toxicity cited in this review involved agents with which there had been considerable experience and, presumably, considerable unrecognized toxicity. This constitutes an argument for the extensive use of the controlled clinical trial, especially in nurseries where it is apparently easy to become committed to the use of routine measures of unproven value. Frequent review of infant and premature mortality rates should bring to light the adverse effects of new regimens. The recognition of altered responsiveness in the very young and the study of the mechanism of such responses may yield information of value to the physiology and pathology of the particular stage of development as well as to the proper use of the agent under study.

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Ureteral Obstruction. Urinary tract involvement with regional enteritis is unusual. Partial ureteral obstruction in the absence of abscess formation is rare. Two cases are added to those in the literature. The authors believe that when a young adult is seen with roentgenographic evidence of partial right ureteral and small bowel obstruction, the diagnosis of regional ileitis should be considered. (C. J. Rominger, et al, Amer J Roentgenol, July 1961)

Traumatic Rupture in Eighty-Three
Cases of Normal Spleen

Timothy Dennehy, Timothy A. Lamphier, William Wickman, and Ronald Goldberg, Boston City Hospital, Boston, Mass, St. Alexis Hospital, Cleveland, Ohio, and Central Hospital, Somerville, Mass. Amer J Surg 102: 58-65, July 1961.

The authors present an analysis of 83 cases of traumatic rupture of the normal spleen. Male persons outnumber female in their susceptibility to this type of injury. In their series, 70% of the patients studied were male.

The peak incidence of traumatic rupture of the spleen occurs in the first two decades of life. This injury is more often caused by the blunt type of trauma rather than by the penetrating type. Penetrating wounds, however, cause the greatest mortality. So-called spontaneous cases of ruptured spleen are probably due to a trivial or unrecognized injury or one that has occurred some time previous to the rupture.

There is a high incidence of associated injuries in persons with a ruptured spleen. In the authors' series, over 75% of the patients had injuries to other organs of the body.

Localized pain in the left side of the abdomen together with nausea and vomiting are so frequent in patients with splenic rupture that it might be considered the "splenic rupture syndrome." Leukocytosis and evidence of a declining hemogram are extremely important laboratory findings in the diagnosis of traumatic splenic rupture. Roentgenographic findings are usually noncontributory in the diagnosis.

The only satisfactory treatment for traumatic rupture of the spleen is still splenectomy.

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Tissue Culture from Kidneys Wounded
by High-Velocity Missiles

M. W. Cavanaugh PhD, Biophysics Division, Director, Medical Research and Development Laboratories, Army Chemical Center, Md., Arch Path 72: 98-106, July 1961.

When a bullet or small missile travelling at high velocity passes through soft animal tissues, it produces a temporary cavity with a volume many times larger than the actual wound tract and a duration of only a few milliseconds. In blocks of gelatin of a consistency similar to that of soft tissue, high speed motion pictures show this cavity to be a region of violent stress. It collapses and rebounds several times, leaving no remnant of its existence other than cracks radiating from the margin of the missile path. The size attained is related to the velocity and shape of the missile, and varies with the density

and elasticity of the tissues the bullet passes through. This temporary deformity is of interest in the pathogenesis and therapy of gunshot wounds since, even though the tissues involved are subjected to a tremendous impact and are violently displaced, the cells not actually destroyed appear normal immediately after wounding.

Apart from blood loss and tearing of the tissues, morphologic evidence of injury is found only in cells in a narrow zone around the permanent wound cavity. Electronmicrographs of skeletal muscle, for example, reveal damage to the tissue only at the very edge of a wound tract to a depth of about 5 mm, although the region of temporary cavitation is many times greater.

Proper debridement of missile wounds, with excision even of some seemingly healthy tissue around the wound tracts, is standard and undoubtedly sound surgical doctrine. Such debridement is designed to promote satisfactory healing by minimizing the development of necrosis. It seems entirely possible, however, that many of the healthy appearing cells that would be excised in the course of the debridement actually are uninjured or, at any rate, are not irreversibly damaged. Such cells would still become necrotic in a short time from the depletion of their supply of oxygen and nutrients and the accumulation of toxic metabolites. This is related to inadequate blood supply resulting from partial or complete destruction of their vascular bed by the temporary cavity formation.

The demonstration of sustained cell division in explanted tissues would provide a clear indication of viability of at least some of the cells in the explant. In order to apply a test of this kind to the wounded tissue, fragments of tissue were excised from the margins of wound tracts just after wounding, and cultured *in vitro*.

Despite the violent stresses of cavity formation following the passage of high-velocity missiles, some of the cells subjected to these stresses were able to survive when provided with a favorable environment. During the first period of cultivation no difference was detected in the morphology and growth of the control and wounded tissues, except for the presence in wounded explants of necrosis of cells that were mortally damaged in shooting. Since this necrosis was much less severe than necrosis *in vivo* after gunshot wounding, it would seem that the environment of the cultures was probably sufficient to protect many of the cells that would have succumbed if left in the body.

Although some of the cells were viable, the mitotic study indicated that they were not all normal. The origin of the aberrations is not known but possible sources can be suggested. Since a number of naturally occurring compounds and tissue extracts can produce mitotic damage, it is possible that toxic products from dying cells may account for some of the effects. The severe abnormalities that cells may suffer in the region of cavitation and any subsequent changes in the sol-gel nature of the cell protoplasm could, especially in cells which may already be in division, result in some unfavorable reorganization of cell structure. The early alteration of cells from wounded tissue to an epithelioid population may be related to increased genetic changes.

In the propagation of cells through several transfers it is not unusual to establish cell strains with characteristics different from the parent stocks. Underlying such changes may be the gradual appearance from a diploid population of more and more cells endowed with a heteroploid chromosome constitution. The greater number of mitotic variations in the wounded cultures may hasten the establishment of altered populations by providing a greater variety of unusual forms for selection.

Since viable cells persist in the tissue at the edge of a missile tract, it is obvious that the extensive debridement used in the treatment of gunshot wounds does remove a considerable amount of living tissue. It seems likely, however, that unless there can be a solution to the problem of rapidly establishing an adequate blood supply, this living tissue must be sacrificed.

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Osteogenic Sarcoma of the Uterus

C. C. Carleton and J. W. Williamson, Department of Pathology, Florida Sanitarium and Hospital, Orlando, Fla. Arch Path 72: 121-125, July 1961.

Osteogenic sarcoma is a malignant tumor composed of an undifferentiated stroma in which bone and cartilage form without the formation of other types of malignant tissues. While cartilage and bone formation are not remarkable in mixed mesenchymal tumors of the uterus, it is most unusual to find a tumor in which no other heterologous element is present, such as squamous carcinoma or rhabdomyosarcoma. In a recent review of uterine sarcomas, Ober found only two acceptable cases reported. This is the report of a third case together with a review of the other two cases.

The theories of histogenesis of extraskeletal osteogenic sarcomas have been extensively covered by previous authors.

The idea advanced that most, if not all, osteogenic sarcomas arising in organs are the result of "the malignant growth of a single element in a teratoma with obliteration of all trace of the other elements does not appeal to the authors' logic since the same might be said of all blastomas."

Uterine myomas were incriminated by one group of authors. But this case differs from the two others in that no preexisting uterine myomata were found. Also, there was no history of irradiation before the onset of symptoms as recorded in one case. The fact that the uterus retained its configuration, although enlarged, and that the tumor tended to line the uterine cavity, forming a cast-like structure, suggests to the authors that the tumor arose from the endometrial stromal cells rather than from myometrial cells.

All three cases occurred in postmenopausal women and ran a short fatal course.

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Plague - New Mexico

S. J. Leland, New Mexico State Director of Public Health, Robert Archibald, Deputy Commissioner, Massachusetts Dept of Public Health. Morbidity and Mortality Weekly Report, Comm. Dis. Center, PHS HEW, Atlanta 22, Ga.

A second case of bubonic plague resulting from exposure in New Mexico died in Boston on July 29. The patient, a 38-year old geologist had been working in an area approximately 10 miles west of Santa Fe. A cutaneous lesion developed about the time of his departure from New Mexico on July 20. He returned home in Boston where he commenced to experience fever and generalized systemic symptoms. He died on July 29 shortly after being admitted to the hospital. Autopsy revealed a shallow necrotic ulcerative lesion on his hand, regional adenopathy and evidence of intravascular hemolysis. Blood cultures were found to contain both beta hemolytic streptococci and plague bacilli.

The first case, reported in last week's MMWR, was in a 38-year old sawmill worker who developed symptoms of chest pain on June 24. Three days later, dyspneic and diaphoretic, he was admitted to the hospital in Santa Fe where he died the following day. At no time did he produce the copious or bloody sputum characteristic of the pneumonic form of the disease. Precise localization of where this man might have been exposed has not been obtainable, although it is in a general area about 15 miles east of Santa Fe, near Pecos.

Intensive studies have been initiated but, to date, no evidence of a rodent die off has been uncovered anywhere in the State. (Rept dated 11 August 1961)

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Bat Rabies - Pennsylvania and New York

E. J. Witte, Chief, Section of Veterinary Public Health, Pennsylvania Dept of Health, Dr. Donald Dean, Veterinary Science Laboratories, New York State Dept of Health. Morbidity and Mortality Weekly Report, Comm. Dis. Center, PHS HEW, Atlanta 22, Ga., 11 August 1961.

During the last two months there has been an unusual number of episodes reported in which rabid or suspect rabid bats have bitten persons in the central and eastern New York and Pennsylvania areas. Other than for three episodes in Lycoming County, Pa., the occurrences have been rather widely scattered in these States. The episodes by State, county, date of biting, and status of laboratory studies with respect to the bats are listed on the following page.

Also obtained in New York State were two additional bats in which rabies was confirmed but which were unassociated with biting episodes. These were obtained in Rensselaer and Albany Counties on May 22 and August 8, respectively.

<u>State</u>	<u>County</u>	<u>Date of Biting</u>	<u>Laboratory Studies of Bats</u>
Pennsylvania	Chester	June 8	Rabies
New York	Westchester	June 20	Rabies
Pennsylvania	Lycoming	July 14	Rabies
Pennsylvania	Northumberland	July 19	Rabies
New York	Schenectady	July 19	Rabies
Pennsylvania	Lycoming	July 24	Pending
Pennsylvania	Lycoming	July 27	Pending
New York	Ontario	July 29	Rabies
New York	Madison	July 29	Rabies
New York	Clinton	August 3	Bat destroyed before studies

Pasteur treatment has been administered to those bitten; no human cases have occurred. The bats in each of the Pennsylvania cases have been identified as the small brown bat (*Myotis lucifugus*). The New York bats are still under study. Intensified surveillance and study of the situation have been initiated.

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MISCELLANY

Profile of the Aging - U. S. A.

J. W. Wiggins PhD and Helmut Schoeck PhD, Professor of Sociology and Associate Professor of Sociology and Anthropology, respectively, Emory University, Atlanta, Ga. *Geriatrics* 16: 336-342, July 1961.

The data presented in this paper strongly support a reexamination of the concepts of the aged in the United States. It may be seriously questioned whether increasing age is pathologic per se, as is implied by the alarm with which it is viewed by many researchers, professional helpers, and policy makers.

While attempting to study the aged, scientists may make them objects rather than persons, and in so doing produce problems where none previously existed. Even social scientists respond to the system as though it had a biologic and social reality that is difficult to demonstrate. There seems little doubt that the present caricature of the aging derives from the application of

experience of a generation ago to a new type of population over 65 years of age. As Donald Bogue and others have pointed out, "One often hears the fallacious statement that comparatively little progress has been made in reducing mortality in the upper ages. The data show that an average decline of 25% in death rates at the intervals of 65 and over has been effected, and that the point decline is larger than for any other age group except those under 5." If the age-specific mortality rates of 1900 were applied to today's aged, the caricature would be an accurate reflection of reality, but these rates are inapplicable.

It must be emphasized that this paper does not deny that parts of our population at all ages—including old age—are dependent, inadequate, ill, and unemployed. The authors share feelings of sympathy for such persons. The study here reported, however, shows that the aging are not characteristically dependent, inadequate, ill, or senile.

It is hoped that further research into the normal can be carried out. Since all resources are limited, whether family, kin, or private or public agencies, recognition that the dependent and helpless in our aged population are limited in number will allow available resources to be applied with discrimination and with far greater hope of return to society.

* * * * *

Oral Hygiene - New Training Film

If you are concerned with the instruction of recruits, if you are interested in an all-hands program, or if as an individual you are interested in your own and your family's oral health, you will want to see the new film, "Oral Hygiene" (MN-8952), just released by the Bureau of Medicine and Surgery. Produced at the request of the Dental Division, the picture is in color and is 17 minutes long. Prints are being distributed to all Naval and Marine Corps training centers, as well as continental USA and overseas training-aids libraries.

Dental disease, or the threat of it, is always with us; the only way to keep ahead of it is through proper oral care at home, proper eating habits, and periodic visits to the Dental officer. That is the theme of the film. If any one element is more important than another, it is the individual person. He and she are the only persons who can protect their own teeth with daily care. For this reason, the film gives approximately half of its time to detailed demonstration of an accepted method of brushing (unusually effective)—most of it in big closeups. At the end of one of these sequences, the patient raises a very common question: It takes a lot of time, doesn't it? The doctor's reply is a good argument for the method: Try timing yourself some day and see how little time it takes.

There have been longer and more elaborate films on oral hygiene, but for simplicity, brevity, and concentration on the important point, MN-8952, Oral Hygiene is expected to do the job for which it was conceived and produced.

FHIAA Award

Information has been received from the Federal Hospital Institute Alumni Association that beginning this year the Association will give awards for the best two articles on hospital administration by U. S. Government personnel.

The first award, a cash prize of \$200, and the second award, a cash prize of \$100, will be given for the two papers selected by a committee composed of members of the FHIAA who report on broad or specific problems in hospital administration. The material presented may be the result of research or experience. Certain weight will be given to the amount and quality of original work involved, but relative value to Federal hospital administration as a whole will be the determining factor. The competition is open to all full-time Federal employees of the U. S. Government; this includes all members of the Uniformed Services except that no person shall be eligible for a second, or both, awards and no paper previously published will be accepted.

Each competitor must furnish an original and three copies of his paper which must not be signed with the true name of the author, but are to be identified by a nom de plume or distinctive code. These must be forwarded to G. P. Ferrazzano MD, Rm 3038, South HEW Bldg., U. S. Public Health Service, Washington 25, D. C., to arrive not later than 30 December 1961. The copies must be accompanied by a sealed envelope addressed with the fictitious name or code assumed by the writer and enclosing his true name, title, position, and address.

The length of the essays is fixed between a maximum of 10,000 words and a minimum of 3000 words. After the winning papers have been selected, the envelopes accompanying the winning essays will be opened by the Chairman of the Committee, and the contestants advised by letter, and presentations made at the American Hospital Association Convention in 1962. The winning essays will become the property of the FHIAA.

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Downgrading and Declassification Program
for Military Publications - June 1961
(OPNAVNOTE 5500 of 12 July 1961)

A large number of classified documents which originated prior to 1 January 1946 were declassified by DoD Directive 5200.9. Similar documents created after 1 January 1946 are subject to downgrading at three-year intervals and declassification after 12 years. Many such documents may now be marked with the appropriate stamp to indicate they have been declassified. (See Joint Regulations, AR 380-6; OPNAVINST 5500.40A; AFR 205-2.)

Classified documents originated after 1 May 1961 must be assigned to one of four groups, and the proper identifying notation must be affixed. Consult your military service regulation (above) for the proper Group and notation.

An automatic downgrading and declassification program, affecting all classified documents received or generated by the Department of Defense, became effective 1 May 1961. All new documents are to be assigned to one of four Groups, and each Group has an identifying notation. (See Joint Regulations, AR 380-6; OPNAVINST 5500.40A; AFR 205-2.)

The originator of a classified document will assign it to the proper Group, and affix the appropriate notation. Documents containing information which is not subject to the classification jurisdiction of the Secretary of Defense will be placed in Group 1 and will bear the notation, "Excluded from automatic regrading: DoD Dir. 5200.10 does not apply."

In Group 2 will be placed TOP SECRET and SECRET documents originated in the Department of Defense on or after 1 January 1946, which individually and specifically are determined to contain information so extremely sensitive that in the interest of national security they must remain in their original classification for an indefinite period of time. Only an official empowered to exercise original TOP SECRET classification authority may assign a document to Group 2.

Documents containing types of information or subject matter specifically excepted from the automatic declassification provisions of the directive are to be placed in Group 3. These documents warrant some degree of classification for an indefinite period of time and, therefore, are not declassified. However, at 12-year intervals they are automatically down graded.

The Joint Regulations issued by the military departments list six subject areas which are specifically assigned to Group 3 and, in addition, provide that classified documents originated in the Department of Defense on or after 1 January 1946, which otherwise would be in Group 4, may individually and specifically be assigned to Group 3 if competent authority determines that they contain information warranting retention in the classified system longer than provided in Group 4. Again, only an official empowered to exercise TOP SECRET classification authority may assign a Group 4 document to Group 3.

When the originating authority can determine an earlier downgrading date for a Group 3 document, a notation indicating the dates for downgrading should be used.

Group 4 documents are those which do not qualify for one of the first three Groups. Group 4 documents originated before 1 January 1946, were declassified 26 November 1958, regardless of their original classification, and should bear the notation, "Declassified, DoD Directive 5200.9." Group 4 documents originated after 1 January 1946, will be automatically downgraded one step each three years after the date of origin, and will be automatically declassified twelve years after date of origin. Such documents will be marked with this notation: "Downgraded at three year intervals; declassified after 12 years. DoD Dir. 5200.10."

The same groupings and notations will be assigned to documents dated prior to 1 May 1961, but deferred marking is permitted, as provided in the regulations.

From the Note Book

Action by President Kennedy on Federal Civil Defense Program. President Kennedy has assigned control of the Federal civil defense program to Defense Secretary Robert S. McNamara. The move, which was recommended by the Director of the Office of Civil and Defense Mobilization, Frank B. Ellis, will place the Secretary of Defense in charge of Federal programs for the protection of the Nation's civilian population from the dangers of nuclear attack. However, the President stressed that civil defense "will remain civilian in nature and leadership."

The Office of Civil and Defense Mobilization will be renamed the Office of Emergency Planning with Frank B. Ellis remaining as Director. He will continue to advise and assist the President in coordinating the civil defense operations of all executive departments as well as planning for continuity of state and local governments, natural disaster relief, defense mobilization, and critical materials stockpiling programs.

Admiral Selectee. Captain Robert B. Brown MC USN, Commanding Officer of the U. S. Naval Hospital, National Naval Medical Center, Bethesda, Md., has recently been selected for promotion to the rank of Rear Admiral in the Medical Corps.

Captain Brown who has commanded the Naval Hospital at Bethesda since March 1960 is a surgeon of national repute. He has served as Assistant and Associate Professor of Surgery at the University of Pennsylvania and is a Clinical Professor of Surgery at Georgetown University School of Medicine, Washington, D. C. He is the Navy Member of the Surgery Study Section at the National Institutes of Health, Bethesda, Md., and the Navy Member on the Board of Governors and on the Graduate Training Committee of the American College of Surgeons.

Captain Brown's professional society memberships include: Fellow of the American College of Surgeons, Fellow of the American College of Chest Surgeons, Diplomate of the American Board of Surgery, Member of the Southern Surgical Association, Member of the American Surgical Association, Member of the Society of University Surgeons, and Member of the International Surgical Society. He is also an Associate Member of the Clinico-Pathological Society of Washington, D. C. and is Deputy Commanding Officer of the National Naval Medical Center.

American College of Chest Physicians Reelects Governor. Captain Joseph M. Hanner MC USN, Executive Officer, U.S. Naval Hospital, San Diego, Calif., was reelected as Governor in the United States Government Service for the year 1961 - 1962 by the American College of Chest Physicians.

Far East Session - American College of Physicians. The U.S. Naval Hospital Yokosuka, Japan, sponsored the first Far East Session, American College of Physicians on 25 August 1961. This was a one-day symposium, containing

eight papers, three panels, and an evening presentation. The honored guest of the meeting was Dr. Phil R. Manning, Associate Dean and Director of the Postgraduate Division, School of Medicine, University of Southern California, who took part in a panel discussion in the afternoon on the subject of "Current Trends in Antibiotics," and delivered the evening address on "Fevers of Obscure Origin." Officially, the meeting consisted of fellows and associate members of the College. However, physicians of all categories belonging to the Services and other governmental agencies in the Far East attended. In addition, as a part of the People-to-People program, approximately 50 distinguished internists and deans of medicine of various medical schools in Japan were guests. The session was considered interesting, informative, and successful.

Marine Corps to Extend Physical Training for Students. The Commandant of the Marine Corps, General David M. Shoup, in support of the President's "Urgent Call" to America's young people to improve their physical fitness, recently announced that the Marine Corps will lend a hand. The Marine Corps Physical Fitness Testing Program, utilized in New York City schools and several other localities for the past 2 years, will be offered nationwide.

Marine Corps Reserve and Recruitment Districts throughout the United States will be instructed to offer assistance to civic and school officials in instituting the program which, during the past school year, provided for the participation of more than 104,000 students in the Greater New York area. The tests offered by Marines for the use of high schools are designed to test the student's ability to perform a variety of body building physical exercises. Instructions governing the Physical Fitness Tests are being prepared for the Corps' Reserve and Recruitment Districts. Headquarters for these districts are located at: Garden City, L.I., N.Y.; Arlington, Va.; Philadelphia, Pa.; Atlanta, Ga.; Kansas City, Mo.; New Orleans, La.; and San Francisco, Calif.

Advance Information on Nuclear Weapons' Effects. The Civil Effects Study (CEX 58.8) abstracted on page 12 of the July 21st issue of the Medical News Letter is primarily based on an outdated edition (1957) of the Effects of Nuclear Weapons. An extensively revised and updated edition of the ENW edited by Dr. Samuel Glasstone is in the final stages of preparation by the Defense Atomic Support Agency and the U.S. Atomic Energy Commission. This will be available from the Government Printing Office in early 1962.

The section on the effects of nuclear weapons on personnel has undergone major revision and essentially outdates CEX 58.8, although it was published in January 1961. Dr. C.S. White plans to revise CEX 58.8 in the future to reflect the advances which have occurred in knowledge of blast, thermal, and ionizing radiation nuclear weapons' effects on personnel since 1957.

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BUMED NOTICE 6230

16 August 1961

Subj: Influenza vaccination program for 1 October 1961 - 31 July 1962

Purpose. To provide information concerning the utilization of polyvalent influenza virus vaccine by military activities during 1961 - 1962.

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Naval Medical Research ReportsU. S. Naval Medical Research Unit No. 3, Cairo, Egypt

1. Hemoglobin E in Egypt, U. A. R.; First Report of a Case Among Non-Asians. MR 005.06-0051.2.05, May 1960.

U. S. Naval Air Development Center, Johnsville, Pa.

1. Acceleration Protection by Means of Stimulation of the Reticulo-Endothelial System. MR 005.15-0002.7 Report No. 15, 22 June 1961.
2. Motion Pictures, Scene Descriptions, and Safety Procedures of Navy Centrifuge Simulations of the X-15 Research Aircraft; progress report. MR 005.15-0007.2 Report No. 9, 26 July 1961.

U. S. Naval Air Material Center, U. S. Naval Base, Philadelphia 12, Pa.

1. Effects on Motor Performance of Acute Venous Impediment and Muscular Tension. MR 005.15-2003.1, 6 April 1961.
2. Catechol Amine Excretion in Urine During Simulated Flight. MR 005.12-1003.6, 19 April 1961.

U. S. Naval Medical Research Unit No. 2, Taipei, Taiwan

1. Emotional Stress and Susceptibility to Infectious and Allergic Diseases. Lecture and Review Series No. 60-1. MR 005.09-1201, November 1960.
2. U. S. Naval Medical Research Unit No. 2 Expedition to British North Borneo 24 August - 4 October 1960. MR 005.09-1601.6.1, January 1961.
3. Non-Marine Mollusca from the Florida Islands, Solomon Islands. Special Report No. 18, June 1961.
4. Nutritional and Environmental Conditions in the Endemic Blackfoot Area. MR 005.09-1901.1, August 1961.

U. S. Naval Medical Research Institute, NNMC, Bethesda, Md.

1. Diversity of Transplantation Antigens in the Mouse. MR 005.02-0001.03 Report No. 4, 2 July 1960.
2. One-Hand Manipulator for Hypodermic Syringes. NM 000 018.07, 26 July 1960.
3. Pharmacological Studies on Irradiated Animals. IX. Quantitative Studies Concerning the Radiation Protective Effect of Mouse and Guinea Pig Spleen Extracts. MR 005.08-1300.03 Report No. 4, 15 September 1960.

4. Short Wave Electromagnetic Radiation as a Hazard to Personnel. Lecture and Review Series No. 60-6, 17 September 1960.
5. Some Aspects of Variation in Rickettsial Virulence. Lecture and Review Series No. 60-7, 21 September 1960.
6. Isolation of a Rickettsialike Microorganism (Wolbachia Persice, N. Sp.) from Persica, N. Sp) from Argas Persicus (Oken).
MR 005.09-1200.02 Report No. 6, 21 September 1960.
7. The Kinetics of Muscular Contraction: The Approach to the Steady State.
MR 005.08-0020.01 Report No. 3, 22 September 1960.
8. Requirement for Glucose by Excised Working Rat Diaphragm.
MR 005.12-1100.02 Report No. 9, 23 September 1960.
9. Gravimetric Method Using Human Expired Air for Preparing Precise Calibration Mixtures for a Respiratory Gas Analysis Instrument.
MR 005.14-3001.05 Report No. 1, 25 September 1960.
10. Heat Stress in Working Spaces of an Aircraft Carrier.
MR 005.01-0001.01 Report No. 3, 26 September 1960.
11. Effect of Myocardial Ischemia at Varying Temperatures on Left Ventricular Function and Tissue Oxygen Tension. MR 005.12-0002.04 Report No. 5
30 September 1960.

U. S. Naval School of Aviation Medicine, USN Aviation Medical Center,
Pensacola, Fla.

1. Hypocapnia and Erythropoiesis. MR 005.13-3100 Subtask 4 Report No. 2, 7 October 1960.
2. Observations of Canal Sickness and Adaptation in Chimpanzees in a "Slow Rotation Room." MR 005.13-6001 Subtask 1 Report No. 55, 31 October 1960.
3. Alterations in the Pure Tone Threshold Following Changes in Both Absolute and Differential Pressures upon the Ear. MR 005.13-1002 Subtask 13 Report No. 1, 1 November 1960.
4. Method for Deriving Personality Questionnaire Items. MR 005.13-3003 Subtask 5 Report No. 1, 1 November 1960.
5. Reliability, Scale Independence, and Flight Student Norms for the Gordon Personal Profile. MR 005.13-3003 Subtask 1 Report No. 32, 7 November 1960.
6. In-Flight Suggestibility. MR 005.13-5001 Subtask 16 Report No. 2, 29 November 1960.
7. Factor Analysis of Primary and Basic Stages of Flight Training: Advanced Multi-engine Pipeline Students. MR 005.13-3003 Subtask 10, Report No. 6, 30 November 1960
8. Interrelationships of Social Perception, Sociometric Status, Personality, and the Ability to Judge Personality Traits. MR 005.13-5001 Subtask 2 Report No. 9, 30 November 1960.
9. The Law of Criticality. MR 005.13-5001 Subtask 4 Report No. 7, 20 December 1960.
10. The Velocity-Volume Loop. MR 005.13-3100 Subtask 8 Report No. 1, 3 January 1961.

DENTAL

SECTION



Reevaluation of Hemostatic Agents

Charles C. Sprague, Tulane School of Medicine, New Orleans, La. Arch Int Med 107:72-73, January 1961 and Dental Abstracts 6:409, July 1961.

Probably no other single form of treatment is applied with such empiricism and as illogically as the administration of hemostatic agents. It is understandable that the practitioner faced with the problem of severe hemorrhage of an unexplained etiology may resort to any therapeutic measure that appears beneficial, no matter how empirical the approach. Unfortunately, and at times inexcusably, hemostatic agents are used before an adequate appraisal of the hemostatic mechanism of the bleeding patient has been made.

The patient's history is a valuable source of information, and often will prove to be more informative than laboratory tests of the bleeding and clotting time.

The pharmaceutical industry has bombarded the dental and medical professions with a vast array of hemostatic agents which are claimed to possess beneficial effects in a wide spectrum of bleeding disorders. It cannot be denied that some of these agents may prove effective to a variable degree in the control of hemorrhages. However, the better defined the indications for the use of these agents, the greater the beneficial effect, demonstrated by double-blind studies. Such tests should be required before hemostatic agents are approved for release.

Similar studies of existing hemostatic agents are almost totally lacking, although there is a great need for an adequate evaluation of this heterogeneous group of compounds.

It is a common impression that the preoperative administration of vitamin K minimizes bleeding, and this drug is almost routinely prescribed as a preventive measure. It is possible, although not established by clinical evidence, that vitamin K possesses a nonspecific hemostatic property if used in healthy persons, but it was found useless for purposeful reduction of the prothrombin activity in dental patients or those undergoing tonsillectomy.

Dentists and physicians are the chief dispensers of hemostatic agents, and it would seem appropriate that they lead the way in an attempt to clarify this problem. Until more definitive studies are available, it would behoove the individual practitioner to be more critical in his appraisal of this form of therapy.

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A Study of the Separation of
Ingredients of Investment Materials

George M. Hollenback and John E. Rhoads, 5255 Encino Avenue, Encino, Calif. J South California DA 28:384-387, December 1960.

Casting investments consist substantially of ground silicon (about 75%), gypsum plaster (about 25%) and a few additives. All reputable manufacturers mix and package their investment compounds in an acceptable manner. However, during transportation the ingredients may become separated.

Six popular brands of investment materials were tested. In initial tests, the investment materials were placed in a homogenizer which produced a short, jarring, vertical movement not unlike the agitation produced by a freight car. After 30 minutes, 150 gm of material was skimmed from the top of the mass, and another 150 gm skimmed from the bottom. Each portion of material was given three tests with the quartz cylinder method of mold measurement (Hollenback and Rhoads, 1960). Another test was made in the same manner, except that the cylinder containing the investment was transported over a smooth, paved highway for 160 miles. The two tests gave practically the same result, and in remaining tests separation was produced by highway transportation.

The tests showed conclusively that the separation of the ingredients of a casting investment is sufficiently large to constitute a problem. Agitation causes the heavier silicon oxide to gravitate to the bottom of the container and the lighter plaster to rise toward the top.

When separation of the ingredients of a casting investment occurs, the ingredients will not be present in their proper proportion in any part of the container. Separation probably exists in all packaged investment materials. If accurate castings are to be made consistently, each package of investment material must be remixed thoroughly. It seems advisable to purchase investment materials only in small containers, for ease of remixing.

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Tooth Decay Discoveries

Science is, at last, on the right path for solving the age old problem of tooth decay. Decay will not occur unless specific bacteria are present. This the experimenters have demonstrated by observing rats that have never been contaminated by germs.

Hitherto, dentists were battling an unknown enemy, trying to prevent an elusive agent from destroying teeth. The leading suspects were heredity, diet, and mouth bacteria—some 50 species of which have been found in human saliva. The first definite clue appeared when scientists at the University of Notre Dame's Lobund Institute discovered that tooth decay does not occur unless bacteria are present. They fed germfree rats a diet that produces

ruinous tooth decay in most normal rats. The germfree rats showed no decay.

Scientists at the National Institute of Dental Research borrowed some of the rats, repeated the experiment, and obtained the same results. No bacteria, no decay. Even when food became tightly packed around the teeth and caused splitting, there was no decay. The question then was: Which one of the bacteria normally found in the mouth causes the decay? Two such organisms were found in the rat. Both are streptococci. One is a true enterococcus; the other lies somewhere between enteric and a lactic strain.

In studies with a line of hamsters free of tooth decay for generations, five more strains of decay producing streptococci were found. The five together were more destructive than any one alone. In many cases it took the bacteria a long time to produce decay. But the evidence was irrevocable—
tooth decay is infectious and transmissible, and bacteria are the cause.

Like any organism, however, the bacteria find it difficult to prosper and do their work—that of decaying teeth—unless they have enough to eat. Thus, a diet high in carbohydrates is an important factor in decay.

There is still a mountain of detective work to be done. Although seven different kinds of bacteria—not too familiar to the bacteriologist—have been established as decay producers, it cannot be assumed that the same seven cause decay in man. The fact that one of the rat streptococcal strains has been found incapable of producing decay in the hamster indicates that each species has its own set of enemies.

Since man is not an experimental animal, researchers use a round-about approach in finding decay producers. They must first find what the dangerous bacteria have in common or what peculiar factor allows them to damage teeth. Presumably, time will separate the innocent bacteria from the guilty, and researchers will be able to name specific organisms that cause decay in the human mouth. There are two general lines of attack on tooth decay: The first line of attack involves some rather tricky problems. The streptococcal strains from the rat and the hamster can be eliminated with penicillin and other broad spectrum antibiotics. But such drugs are unsuitable not only because many persons may develop allergic reactions to them but also because they destroy all other bacteria. This allows other organisms such as yeast and fungi to run rampant. They may cause serious lung ailments, for example, and can cause death.

Perhaps the best antibiotic approach is one with a narrow spectrum of action which kills only the decay-producing bacteria. Even so, there is always the danger that decay strains will become resistant.

There is another approach—the use of chemicals that interfere with the metabolism of the bacteria. Minute amounts of carbonyl-binding compounds have cut tooth decay by as much as 86% when placed in rat food.

The second line of attack on dental decay—that of toughening the tooth—is already in progress. Nearly 40,000,000 Americans are now drinking fluoridated water, the value of which is no longer debated among dental scientists. The 1960 report of the 16 member Commission on the Survey of Dentistry in the United States said: "Fluoridation is convenient, inexpensive

(about eight cents per person per year, including amortization of equipment), and absolutely safe. In every locality where it has been installed, the tooth decay rate has been reduced by at least 50%, in some places by nearly 60%."

With more than three-fourths of the population still unprotected by fluoride, scientists at the National Institute for Dental Research are studying another approach that can reach even more persons—phosphated bread.

Mineral phosphates, particularly dibasic calcium phosphate, drastically reduce tooth decay in rats. By 1962 dental researchers will know whether it works just as well on humans. At that time, the first 3-year period in their study of phosphate-fed children in North and South Dakota will begin to yield results. If the technic works, bakers and cake-mix manufacturers will be urged to include more phosphates in their products.

Despite the fact that tooth decay afflicts 93% of the United States population, tooth decay is not the major cause of tooth loss among adults.

Periodontal disease, also known as gum disease, gingivitis, or pyorrhoea, causes more tooth loss in adults than all other causes combined. This is an insidious disease that starts when the gums become inflamed and swell away from teeth. Small open pockets form between tooth and gum; bacteria collect in these pockets and produce toxins that eat away the fine filaments that connect the tooth to gum and bone. The tooth foundation is weakened and eventually the tooth is lost.

Bacteria may also enter the blood stream through this route.

For the most part, periodontal disease is painless; this is the principal reason 22,000,000 Americans are toothless. The disease goes unnoticed and untreated. Dentists now know that 50% of persons aged 50 have periodontal disease, and by age 65, the involvement is nearly 100%.

For many years, the tartar that forms on teeth has been suspected of causing lesions that give periodontal disease its start. It was thought that bacteria were necessary for tartar formation. But this is not true. Tartar can and does form in the mouths of germfree rats. Chemically and microscopically, it is quite similar to tartar from normal rats except that it has no bacteria trapped in it.

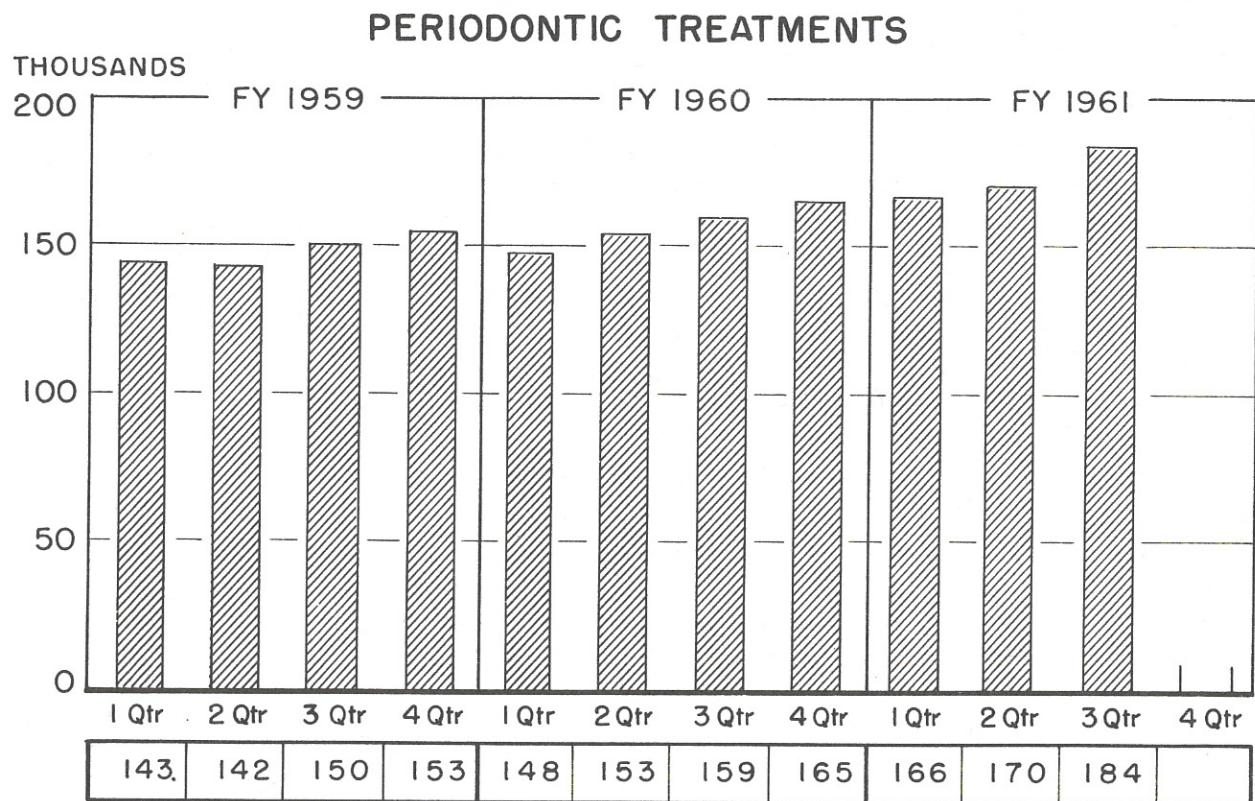
Many different methods of dissolving tartar from the teeth have been tried but anything that dissolves tartar also dissolves tooth enamel. At present, dentists treat and try to prevent periodontal disease by scraping the tartar off, teaching their patients how to brush their teeth properly and keep their mouths reasonably clean. In cases of advanced disease, gum surgery is needed.

Dentistry has come a long way from the days in the first century B.C. when the suggested remedy for toothache was to eat a whole mouse twice a month.

But in spite of anesthetics and high-speed drills, Americans, like people the world over, are still notorious cowards about facing the dentist. (Science News Letter 80:26-27, July 1961)

Preventive Dentistry in the Navy

The results of increased realization of the importance of preventive dentistry are reflected in the sustained rise in the number of periodontic treatments provided by Naval dentists during the past 3 years. This trend is indeed gratifying since any successful health program must have a foundation in prevention.



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Personnel and Professional Notes

Dr. Travell Lectures at Naval Dental School. Dr. Janet Travell recently presented a lecture on "Temporomandibular Joint Pain Referred from Muscles of the Head and Neck," to staff, resident, and postgraduate dental officers, as well as to civilian and military guests, at the U. S. Naval Dental School, NNMC, Bethesda, Md.

Dr. Travell is the personal physician to the President of the United States. She is Associate Professor of Clinical Pharmacology at Cornell University Medical College, Physician to Out-Patients of the New York Hospital, and Associate Physician, Cardiovascular Research Unit, Beth Israel

Hospital. She has a new appointment as Associate Clinical Professor of Medicine at George Washington University Medical School.

Dr. Travell has been principal investigator for the National Heart Institute of the National Institutes of Health, for the Lt. Joseph P. Kennedy, Jr. Foundation, and for the Josiah Macy, Jr. Foundation.

Her honorary society memberships include Phi Beta Kappa and Alpha Omega Alpha.

Dr. Travell is a member of numerous professional societies such as the American Medical Association, American Rheumatism Association, American Society for Pharmacology and Experimental Therapeutics, American Association for the Advancement of Science and Society for Experimental Biology and Medicine.

BUMED NOTICE 6750. This Notice, dated 2 August 1961, announced the discontinuance in fiscal year 1962 of the program to convert dental operating units to higher speed operation. Information is provided concerning the projected availability of an air turbine unit as a standard line item in the Military Medical and Dental Supply Distribution System early in calendar year 1962.

Sangley Point Dental Seminar. The Fifth Annual Dental Seminar was held recently at the U. S. Naval Station, Sangley Point, Philippines. Approximately 250 dentists attended the seminar.

The scientific portion of the program included the following lectures: Full Denture Considerations, CAPT F. K. Etter DC USN; Post Crown Restorations for Endodontically Treated Teeth, LCDR R. H. Flagg DC USN; Treatment and Prevention of Local Anesthesia Reaction, LT E. F. Humphreys DC USNR; and Pulp capping, Pulpectomy, Pulpotomy, LT F. A. Celsi DC USNR. The film The Navy Dental Corps was also shown.

CAPT F. K. Etter, DC USN is the Senior Dental officer at the Naval Station.

CAPT Urban at FDI Meeting. CAPT K. L. Urban DC USN, Senior Dental officer, U. S. Naval Support Activities, Naples, Italy, represented the U. S. Naval Dental Corps at the 49th Annual Session of the Federation Dentaire Internationale (F. D. I.). The meeting was held July 7-15, 1961, in Helsinki, Finland.

At the meeting CAPT Urban presented a paper and slide lecture prepared by Rear Admiral C. W. Schantz DC USN, Assistant Chief of the Bureau of Medicine and Surgery (Dentistry), and Chief, Dental Division. The title of the presentation was Use of the Military Dental Record for Identification.

Navy Dental Officers Appear in Tokyo. During the evening of July 20, 1961, officers of the U. S. Naval Dental Clinic, Yokosuka, Japan, presented table clinics at the monthly meeting of the Tokyo Dental Association in Tokyo. The presentations were attended by approximately 100 Japanese dentists. The clinicians were: CAPT L. G. Hopfer DC USN, Monoplane Occlusion in Complete

Dentures; CAPT C. E. Kailer DC USN, Rest Preparations for Partial Denture Prosthesis; and LT M. S. Jacobs DC USNR, Temporary Acrylic Bridges.

CAPT R. D. Wyckoff DC USN is the Commanding Officer of the Naval Dental Clinic, Yokosuka.

CAPT Pepper to Present Essays. CAPT John W. Pepper DC USN, Head, Crown, and Bridge Division, U. S. Naval Dental School, NNMC, Bethesda, Md., will present two essays at the West Virginia State Dental Society meeting to be held at the Greenbrier Hotel, White Sulphur Springs, West Virginia. The essays to be presented are entitled *Full Crown* and *Why Bridges Fail*.

Naval Dental School Drill Team. A drill team of dental technicians attached to the U. S. Naval Dental School, Bethesda, Md., has been formed. The idea of a drill team was conceived by two dental technicians who wished to improve the military bearing and marching capabilities of enlisted personnel of the Command.

The team was awarded second prize for marching skill during the Catonsville, Md., Independence Day Parade. Among the teams placing after the Dental School team were several drill units from other United States military services.

Dental technicians second class Boysie McCaskile of Orlando, Fla., and Joseph G. Nahas of Shenandoah, Pa., are the organizers of the team.

CAPT Canon Retires. CAPT Rush L. Canon DC USN was placed on the Temporary Disabled Retired List of the Navy on July 1, 1961, after more than 25 years of service.

CAPT Canon was born in Spencer, Iowa, and graduated from the College of Dentistry of the State University of Iowa in 1932. From 1932 to 1936, he held a commission as 1st Lieutenant in the U. S. Army. In April 1936, he reported to the U. S. Naval Training Center, Great Lakes, Ill.

During World War II, Captain Canon served on the USS Enterprise and was commended by the Commander in Chief, U. S. Pacific Fleet, for his distinguished service during the attack on Pearl Harbor.

Prior to his retirement, he was the Force Dental Officer, Submarine Force, U. S. Pacific Fleet.

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Few can be induced to labor exclusively for posterity; and none will do it enthusiastically. Posterity has done nothing for us; and, theorize on it as we may, practically we should do very little for it, unless we are made to think we are at the same time doing something for ourselves.

—Abraham Lincoln

RESERVE



SECTION

Opportunities for Training

Training in the Naval Reserve is accomplished through participation in the Selected Reserve Program (drill pay), the Specialist Program (non-pay), by performance of Appropriate Duty (pay and non-pay), and by performance of active duty for training (pay and non-pay).

Selected Reserve Program

The Selected Reserve Program consists of those forces required immediately upon the outbreak of hostilities involving the United States. The Selected Reserve forces have been established under five (5) components as follows:

1. Antisubmarine Warfare (ASW)—consists of selected Air Reserve forces and Reserve crews of designated DD and DE type vessels.
2. Mine Warfare—consists of Reserve crews of designated MSC (O) type vessels.
3. Active Fleet Augmentation—consists of selected Air Reserve forces and the Surface, Submarine, and Hospital Corps Programs. Included in the Surface Program are Surface, Electronics, Fleet, and Training Divisions.
4. Fleet Support Activities—consists of Naval Air Reserve Maintenance Units and the Advanced Base Command; Amphibious Beach; Construction Battalion; Harbor Defense; Military Sea Transportation Service; Ship Activation; Maintenance, and Repair; and Ship Supply Officer Programs.
5. Shore Establishment—consists of Bureau of Naval Weapons Air Reserve Training Units and the Telecommunications Censorship; Communications; Intelligence; Marine Terminal Management; Mobilization on Team; Naval Security Group; Selective Service; and Recruit Training (W) Programs.

The basic unit of the Selected Reserve Program is termed a Division. Attachment to a Selected Reserve unit in a pay status requires:

- (a) Attendance at scheduled drills of the unit. Drills are of three hours duration and are held 24 or 48 times annually, depending upon the specific program.
- (b) Performance of 14 days of active duty for training each fiscal year. Pay and allowances are received during this period.
- (c) Acceptance of Type A Mobilization Orders, which require immediate reporting to a designated active duty assignment in the event of an attack upon the United States or full mobilization.

Hospital Corps Program

The Hospital Corps Program, as a program of the Fleet Augmentation Component of the Selected Reserve, has the mission to provide trained medical and dental enlisted personnel available for immediate active duty to increase the manning level of afloat units of the active fleet to full war complement.

Hospital Corps Divisions drill 48 times annually.

The following categories of Naval Reservists are eligible for attachment to Hospital Corps Divisions in a drill pay status:

Officers

1. Officers with 2105 (Medical Corps) designators.
2. Officers with 2305 (Medical Service Corps) designators and warrant officers with 8175 (Medical Service Warrant) designators may be assigned to vacant 2105 officer billets.
3. Officers with 2205 (Dental Corps) designators are authorized when at least 10 enlisted dental technicians are attached.

Enlisted

1. Enlisted hospital corpsmen of pay grades E-7, E-6, E-5, and E-4.
2. Enlisted dental technicians in authorized hospital corpsman billets.
3. Personnel in pay grade E-4 of any rating may be assigned, by specific approval by the Naval district commandant, to an HM billet for change of rating to HM or DT rating as appropriate. Personnel in this "in-training" status shall have their pay status terminated if they do not fully qualify for change of rating within certain time limits.
4. Personnel in pay grades below E-4 may be assigned in an "in-training" status for change to a Group X (medical) or Group XI (dental) rating, as appropriate. These personnel shall be allowed 12 months to effect change of rating to Hospitalman or Dentalman.

Associate Pay Status

1. Officer associate pay billets are not authorized.
2. Hospital corpsmen in pay grades E-7 and E-6 and yeomen/personnelmen in pay grade E-6 may be associated in a pay status. Interested persons may obtain additional information concerning the Hospital Corps Program of the Naval Reserve by contacting the District Medical Officer of the Naval District in which they reside or by communicating directly with the Reserve Division, Bureau of Medicine and Surgery, Department of the Navy, Washington 25, D. C.

Opportunities for Affiliation with Other Programs of the Selected Reserve

Drill pay billets for the designated category of Medical Department officers (less dental) also exist in the following Selected Reserve Programs:

Air Reserve	2105 (Medical Corps) 2305 (Medical Service Corps)
Surface	2105 2305
Advanced Base Command	2105 2305
MSTS	2105 2305 8175 (Medical Service Warrant)
Mobilization Team	2105
Ship Activation, Maintenance, and Repair	2305 8175

Information as to the location of units of the Selected Reserve, eligibility requirements, and application procedure can be obtained from the nearest Naval Reserve training center or by writing to the commandant of the Naval district in which the interested officer resides.

Marine Corps Reserve

While organized units of the Marine Corps Reserve are not a part of the Selected Naval Reserve, their concept is identical; i. e., organized units which are immediately available. The 2105 officers and hospital corpsmen of the Naval Reserve are eligible for attachment to these units in a drill-pay status. (To be continued.)

* * * * *

The despisers of mankind—apart from the mere fools and mimics of the creed—are of two sorts: they who believe their merit neglected and unappreciated, make up one class; they who receive adulation and flattery, knowing their own worthlessness, composing the other.

— Charles Dickens



OCCUPATIONAL MEDICINE

Clinical Observations on Cutaneous Effects Associated with Curing Epoxy Resins

D. J. Birmingham, Medical Director and Chief Dermatologist, Occupational Health Program, Bureau of State Services, PHS DHEW, Cincinnati, Ohio. Arch Industr Health 19:365-367, March 1961.

Occupational dermatitis occurring from the manufacture of plastics was observed shortly after the industry began. Phenol, urea, formaldehyde, and hexamethylenetetramine were among the chemicals first used in making synthetic resins, and became well-known dermatitis producers. Later, almost every new plastic, such as styrene, alkyd, melamine, acrylic, and polyvinyl, became associated with outbreaks of dermatoses in respective industries. About 6 years ago, epoxy or epoxide resins were introduced to American industry; since that time we have had an opportunity to observe many cases of contact dermatitis due to handling these resins and their amine hardeners. This is a problem not only in our industry, but one which has been similarly noted in Great Britain, the Netherlands, and Switzerland where much of the epoxy development took place.

The epoxies have become commonplace in a large cross section of United States manufacturing because of their excellent strength, adhesion, chemical resistance, and dielectric properties. They are widely used in electrical equipment manufacture for enclosing transformers, condensers, and other components; in automobile plants for tool and die castings; in painting for surface coatings; and in aircraft and other plants for adhesive purposes. Their versatility points to even greater application.

Some epoxy resins are irritants, sensitizers, or both, but the major problem in handling these materials occurs from the di- or triamine curing agents which are, for the most part, irritants and sensitizers.

The workman contacts the epoxy resin and the hardener while mixing the weighed or recommended amounts of these basic ingredients. In small plants several workmen may mix their own batch of resins and hardeners; thus it becomes difficult to control contact with the basic ingredients.

After the resin and hardener have been mixed, the material can be cast into a mold or it can be brushed onto a form. Sometimes the mixture is successively alternated with layers of Fiberglas cloth to construct the mold

or form. Molding is generally done with rollers, brushes, or similar tools, and on occasion, by hand. As a rule, the resin becomes deposited on the tools which are subsequently dipped into acetone or other ketone solvents for cleaning purposes. At the same time, the workman frequently uses the solvent to remove the resin from his skin. Finally, after the molding or casting has been done the laminates are tooled. The epoxy Fiberglas structure may be sanded, drilled, sawed, and painted.

In these successive operations, several hazards occur, namely:

1. Mixing—when mixing the resin with the hardener, contact may be made with the basic components or their vapors.

2. Molding—some workers mold the material while wearing gloves; others use no protection whatsoever; rarely are the face and neck protected.

3. Cleansing with Solvents—cleansing the tools in solvents and at the same time removing the resin from the gloves or the skin constitute a distinct hazard. The resin tends to concentrate in the solvent container; a workman washing resin from his skin in this fashion unwittingly deposits a film of resin upon the skin.

4. Tooling—grinding, drilling, or sanding the cast or molded laminates create a hazard of contact with minute spicules of Fiberglas. A mechanical dermatitis can occur when slugs of glass become imbedded in the exposed surfaces of the skin. This is not an allergic dermatitis, but simply a foreign body reaction giving rise to irritation, itching, scratching, and frequently, secondary infection. In Great Britain it has been suggested that the tooling operations may also depolymerize the resin, in which instance the workmen would be contacting resin decomposition products largely of unknown composition.

Many uncured epoxy resins can be handled without ill effect, but those of the lower molecular weights have irritant properties. On the other hand, almost all amines are irritants and sometimes sensitizers. Their high pH (13-14) damages the keratin or at least severely weakens this protective layer of the skin. At the same time, surface lipid is readily removed. Further insult occurs from contact with the ketones. The additional alkaline effect of most industrial cleansers, along with the amines and solvents, leads to marked redness and dryness of the skin. A dermatosis of varying degree usually results. There have been complaints that contact with the fumes has caused not only a dermatitis of the face, eyelids, and neck, but also asthmatic symptoms from breathing the amine-contaminated air. Several years ago, Dernehl reported this problem among men working with amines.

From case histories collected during numerous surveys involving these operations and from reviewing the experience of others in Europe, it is evident that the major cutaneous effects are produced by contact with the liquid stage of the low molecular weight resins, the hardener, or a mixture of these before polymerization or curing is complete. As a general rule, the completely polymerized product is inert upon the skin.

The onset of dermatitis generally occurs within 3 weeks from the beginning of employment, but it may be seen earlier in workmen already sensitized

or among those who are careless in handling the mixtures. Most workmen continue to work by using protective devices, but some who have become highly allergic must change employment.

The author concluded that the best method of controlling dermatitis from epoxy resins is to introduce the best preventive practices possible. Outbreaks of dermatitis can be averted by following a few basic rules: (a) thorough education of management, supervisors, and workmen about the hazards; (b) adequate ventilation to control the Fiberglas particulates and the epoxy dusts and vapors; (c) personal cleanliness through appropriate industrial cleansers, protective clothing, and where needed, protective creams. To elaborate further, the following recommendations have been found to be reasonably effective:

1. All supervisors and workmen should be instructed thoroughly about the hazards of these operations and the importance of avoiding contact.

2. Mixing, molding, curing, and tooling of the resins should be done in an isolated area of the plant to avoid contamination of other areas and employees.

3. Batch mixing of the resin and hardener should be done under a ventilated hood to control escape of vapors. Only a few workers should be permitted to do batch mixing.

4. During molding operations, skin contact can be avoided by wearing protective sleeves and cotton-lined rubber gloves. Clean uniforms should be furnished and changed each day if necessary.

5. Acetone or related solvents are not to be used to cleanse the skin.

6. Tables, machinery, tools, floors, walls, and windows must be kept free of Fiberglas spicules and resinous dusts. Tables can be kept clean by using disposable heavy paper.

7. Cleanup rags should be replaced by disposable paper towels.

8. Grinding, sawing, drilling, or polishing molded laminates should be done under ventilated hoods which remove all dusts from the breathing area and minimize the problem of skin contact.

9. Accidental spills of the resin or catalyst should be washed from the sites contacted as soon as possible by using mild soaps in warm water dispensed at conveniently located wash stations.

10. Neutral or acid soaps should be used in preference to alkaline, powdered, or abrasive cleansing agents.

11. Water-soluble skin-protective gels which are neutral in their pH provide some help in protecting against the action of the solvents.

In summary, after introduction of epoxy resins into American industry, a large number of cases of contact dermatitis occurred. Many basic epoxy resins can be handled without offending the skin, but most amines used as hardeners have an irritant or sensitizing effect. It is possible to avert contact dermatitis in working with epoxy resins by educating all concerned on the hazards associated with these materials, by introducing vapor and dust control measures, and by employing personal protective devices, notably protective gloves, adequate washing facilities and cleansing agents.

Acute Gasoline Intoxication

CAPT Chung C. Wang MC USAF and CAPT George V. Irons, Jr., MC USAF, 1710th USAF Hospital, Donaldson Air Force Base, S.C. Arch Environ Health 2:114-116, June 1961.

Among the toxic propellants of modern power plants, gasoline remains very important because of its wide usage and availability. Unfortunately, familiarity with a toxic agent occasionally leads to a lessened appreciation of its lethal potential. Though the maximal safe limit for gasoline, in case of continued exposure, should be 500 ppm or less (as recommended by the American Governmental Industrial Hygienists) susceptible individuals have suffered acute intoxication after exposure to concentrations of 300 to 500 ppm, even though they were protected with respiratory devices. The vapors of gasoline in a concentration of 2000 ppm are dangerous to breathe, while higher concentrations are rapidly toxic. The chief systemic reaction to petroleum hydrocarbon poisoning following inhalation of gasoline vapor in sufficient quantity is central nervous system depression. Death is usually due to respiratory arrest. Apparently, such was the situation in a fatal case of gasoline poisoning which occurred on this base early this year.

Case Report

A 25-year old white male qualified C-124 aircraft mechanic had previously signed all entries on the technical order familiarization chart, indicating that he had read all pertinent directives concerning precautionary measures to be taken before entering gasoline tanks to do repair work inside. Such precautionary measures include (1) proper purging of the tanks following drainage; (2) buddy sentinel system; (3) portable oxygen equipment.

On 2 February 1960, he was in charge of a team of mechanics whose job was to change a fuel booster pump inside the wing tank of a C-124 aircraft. He carried out most of the required preliminary procedures in a routine fashion and ordered a co-worker to obtain an airblower for purging the tank before performing the maintenance work inside the tank. Another co-worker then cut his finger and went inside the aircraft to secure a bandage, thus leaving the subject of this case alone on the wing of the aircraft. It was anticipated that the required purging would take approximately 2 hours, and the actual work subsequent to the purging approximately 15 minutes. With apparent complete disregard for the precautions he had been taught to observe, he entered the unpurged wing tank and began work on the booster pump. Approximately 5 minutes later he was found unconscious within the tank and was quickly removed. Artificial respiration was begun immediately, and the patient took several weak uncoordinated gasps before he died. An ambulance promptly transferred the patient to the base hospital where he was dead on arrival. Autopsy revealed acute pulmonary edema, acute exudative tracheo-bronchitis, passive congestion of the liver and spleen, and early acute

hemorrhagic pancreatitis. Toxicologic studies carried out at the Armed Forces Institute of Pathology revealed a tissue lactic acid of 154 mg %. No alcohol was found. An unidentified volatile material was extracted from the brain by steam distillation. The findings were felt to be compatible with acute hydrocarbon poisoning.

Comments

Aviation gasoline is a complex mixture but consists mainly of paraffins (saturated aliphatic hydrocarbons), cyclic paraffins (naphthenes), and aromatic hydrocarbons, including benzene, toluene, xylene, and cumene. Since hydrocarbons are primary irritants, aspiration almost invariably results in serious and often fatal pulmonary edema. The myocardium is sometimes so sensitized by the aromatic hydrocarbons that small amounts of endogenous epinephrine would precipitate ventricular fibrillation and sudden death. However, sudden death due to the ventricular fibrillation occurs less frequently than asphyxia resulting from central nervous system depression. Pulmonary edema and hemorrhagic pneumonia usually make the situation worse.

The patient under consideration was apparently overwhelmed by a relatively brief exposure to a high concentration of gasoline vapor. Haggard, in saying that for short exposures the time element is much less significant than the concentration, found that convulsions occurred in dogs at about 1% when the concentration was gradually increased from zero, even though the time required to reach this level varied from 12 to 35 minutes, and that at 1.6%, immobility resulted regardless of the variation of time (16 to 44 minutes) to reach that concentration.

In the confusion of effecting rescue, an air sample for analysis was not obtained in this case. It is safe to assume that the wing tank of the C-124 aircraft which had been emptied of its gasoline, its vapor being not yet driven off by an airblower, or purged by a jet stream of steam, contained a very high concentration of the lethal residue.

The authors have taken several measurements of unpurged empty wing tanks of a C-124, and the concentrations of the gasoline vapors varied from 0.5% to 1.6%. Variations may be due to such factors as whether the plane is parked under the shade of the hangar or in direct sunshine on the parking apron.

The clinical history and pathologic findings are entirely compatible with a diagnosis of death due to hydrocarbon poisoning. The mechanism of death was apparently respiratory arrest with irreversible cerebral damage, although ventricular fibrillation cannot be excluded. The usual pathologic findings in case of hydrocarbon poisoning, aside from constant damage to the lungs, are petechial hemorrhages throughout the internal organs, manifestations of damage to the vascular endothelium, centrilobular cloudy swelling or fatty infiltration of the liver, considerable edema of the kidney, and hyperemia and edema of the brain, with perivasculär hemorrhagic extravasations.

Toxicologic studies of the brain often yield a volatile hydrocarbon. In the case under review, the finding of early hemorrhagic pancreatitis at autopsy is an interesting observation. The fact that an unidentified volatile material was extracted from the brain by steam distillation certainly suggests an acute hydrocarbon poisoning.

This case serves to point out the need for reminding individuals working with toxic materials of the lethal potentialities of their occupations and the necessity for strict obedience of prescribed precautions. The advice given by Dr. R. A. Kehoe in *Aviation Toxicology* is appropriate: "Personnel should avoid all but brief and necessary contact of aviation gasoline with the skin, and exposure to vapor should be reduced to a minimum at all times. Exposure to vapor in an inclosed place, in which liquid gasoline is present or has been spilled, should never be permitted. Entrance into such a space without the protection of adequate respiratory equipment and assistance in supervision from without is a foolhardy adventure which invites death."

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Measuring the Work Capacity of the Disabled

Jose C. Montero, May T. Morrison Center for Rehabilitation, San Francisco, Calif. *Industr Med Surg* 30:138-140, April 1961.

For management to judge whether an applicant has the technical and intellectual requirements for a particular job is a fairly simple matter. Written examinations, experience, education, and training can usually disclose his ability. His physical and emotional fitness, however, is considerably more difficult to ascertain.

The physician who must decide whether this person can perform a specific job without hazard to himself or his co-workers needs to use more than pure medical knowledge in order to offer a valid opinion. He is faced with even more of a challenge when he tries to determine the potential work power of a handicapped person. Familiarity with job requirements, knowledge of the public and private agencies which are concerned with the welfare, rehabilitation, and placements of the disabled and the use of consultative services can often help the physician solve these more serious evaluation problems. Analyzing the demands of the specific job and appraising the prospective worker's abilities as they relate to that job are the essential objectives of any preemployment examination.

Analysis of the Job

The job description can usually be obtained from (1) the prospective employer, (2) the referring agency, (3) the U. S. Employment Service, or (4) the prospective employee. Included in this description should be details of (a) the physical demands of the job, (b) the emotional demands of the job, (c) working conditions, and (d) hazards involved.

Physical Demands of the Job

Class I (heavy). Includes jobs requiring climbing, carrying, lifting. This would include linemen, warehouse men, construction workers, lumbermen, miners, stevedores and other workers whose jobs depend largely on gross physical energy expenditure.

Class II (medium). Includes jobs requiring handling, fingering, manipulating. A limited amount of climbing, carrying, and lifting may be required. Assembly line and bench workers, clerical and sales workers, and others whose jobs require mainly manual skills belong in this group.

Class III (light). Includes jobs requiring planning, inspecting, directing, and the use of fine hand skills. Little or no climbing, carrying, and lifting are involved. Watch repair, drafting, small appliance repair, interviewing, and most sedentary jobs belong in this group.

Emotional Demands of the Job

Although a job description may include some emotional demands, the description is rarely adequate to give the physician a complete picture of these important factors. Since approximately 80% of today's jobs do not require tremendous muscular effort, failure to perform may often be due to an inability to meet the emotional demands. Pressures and tensions are potentially present in all jobs but the degree may vary from job to job, from industry to industry, and even from area to area. The reaction of the individual to these tensions is equally varied and must be considered on an individual basis. Today, new jobs created by technologic advances, and modification of the old jobs by automation, while they are less demanding physically, have increased many of the factors causing emotional distress. Evaluating the degree of frustration, monotony, boredom and stress involved in the performance of a specific job will be of value when matching the applicant to the job.

Of no less importance is the role of the supervisor, since success in employing the disabled is dependent on how the newly employed is placed, trained, and supervised. This will help to insure that a satisfactory adjustment is being made to this new environment.

Working Conditions

The details of working conditions will give the examining physician an insight into the environment where the prospective worker will perform. This is important because, occasionally, a handicapped person may be able to manage a specific job adequately but be defeated by adverse environmental conditions. Therefore, information regarding the accessibility of work areas, toilet and lunch room facilities, the number of stairs with and without handrails, presence of elevators or ramps, and the availability of public or private transportation should be given careful consideration. Also, the more obvious conditions such as whether the work is indoors or outdoors, the

temperature ranges, working hours, degree of humidity and air pollution, and whether the work will be done in cramped quarters, alone or with others, and at high or low altitudes is important.

Job Hazards

Modern safety practice and modern work methods have eliminated many occupational hazards of the past. Today, many accidents are believed to result from careless acts rather than from unsafe conditions. However, there are still industries that are considered hazardous: coal mining, lumbering, marine transportation, construction, and trucking head the list.

Some factors to be looked for in reviewing the hazards of a specific job are the presence of moving objects, possibilities of falls from heights or on slippery floors, and exposure to respiratory irritants, toxic material, radiation, noise, and heat.

Appraisal of the Individual

Medical Examination. In order to estimate how the handicap will affect the performance of the proposed job, it will be of value to consider the following questions: Is the handicap permanent, temporary, or progressive? Is the nature of the handicap such that it might be aggravated by the performance of the job? Will the handicap permit the individual to perform the job safely and without endangering his health or the health and safety of his co-workers?

The nature of the work limitation should then be ascertained and recorded. This is important in order to be sure that the proposed job is compatible with the physical and emotional restrictions imposed by the handicap.

From the author's observations, the most frequent limitations of workers in need of selective employment are (1) limitations due to defects in balance (walking, standing, sitting) and in upper extremity function (absent limb, lack of dexterity, sensory loss); (2) limitations of muscle strength (from weakness to paralysis); (3) psychologic and psychiatric limitations (intellect, reality, motivation, social orientation); (4) restrictions in joint mobility; (5) decreased physical and emotional tolerance (manifested by fatigue, pain, lack of concentration, emotional instability); (6) visual, auditory and speech impairments; (7) allergic reaction, and (8) multiple limitations (two or more of above).

The medical examination should proceed to evaluate the remaining physical and emotional capacities of the individual to determine whether he can perform the job on a competitive basis in spite of the handicap. In other words, can he meet production standards in speed, endurance, and accuracy? Can he use the existing lunch room, toilet facilities, stairs, elevators? Can he use the existing transportation facilities? (To be Continued)

Contact Lenses and Eye Hazards

Following a recent accident, Dr. Hedwig S. Kuhn, an Indiana ophthalmologist, issued a warning against wearing contact lenses while performing hazardous industrial operations. The accident occurred while a process engineer was conducting a chemical experiment in what was designated a hazardous area. He was wearing both contact lenses and safety goggles. As he observed the reaction, some 50% caustic blew into his eyes and face. An emergency eye bath flushed the caustic from his face and partially from his eyes. It was necessary to move the engineer to another room to remove the contact lenses, but the caustic had already caused deep burns which may result in partial loss of sight in one or both eyes. The company has since banned the wearing of contact lenses in hazardous areas.

Contact lenses are contraindicated wherever there are chemical eye hazards or where the air contains many foreign particles which could work under the lens and damage the cornea. (HEW Quarterly Report on Occupational Health Activity, January 1 - March 31, 1961)

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